

Patent claims

1. A turbine (1) comprising a rotor (3) extending in the axial direction and an accessible combustion chamber (6) which communicates with an annular hot-gas duct (18) in which a multiplicity of guide blades (12) are arranged in such a way as to form a guide-blade row (13), each guide blade (12) having a guide-blade root (21) fixed to the inner casing (20) and a guide-blade tip (22) which is opposite the guide-blade root (21), faces the rotor (3) and is fixed to a fixing ring (24), enclosing the rotor (3), of the turbine (1), characterized in that the guide-blade root (21) and/or the guide-blade tip (22) can be secured by means of a manually releasable clamping device (25, 35).

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2. The turbine (1) as claimed in claim 1, characterized in that the clamping device (25, 35) can be secured to the inner casing (20) or to the fixing ring (24), respectively, and fastens the guide-blade root (21) or the guide-blade tip (22), respectively, in an operating position by means of a tie rod (28, 38) running in the axial direction.

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3. The turbine (1) as claimed in claim 1 or 2, characterized in that, to remove the guide blade (12) through the combustion chamber (6), at least that part of the clamping device (25, 35) which faces the combustion chamber (6) can be removed from the clearance profile of the guide blade (12) after the release of the tie rod (28, 38).

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4. The turbine (1) as claimed in one of the preceding claims, characterized in that,

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to remove the guide blade (12), the clamping device (25, 35) can be fixed in a parking position exposing the guide-blade root (21) or guide-blade tip (22), respectively.

5 5. The turbine (1) as claimed in one of the preceding claims, characterized in that the clamping device (25, 35) comprises two radially extending retaining stops (26, 27, 36, 37) which can be fastened by means of the tie rod (28, 38).

10 6. The turbine (1) as claimed in one of the preceding claims, characterized in that the guide blade (12) is arranged in the first guide-blade row (13) as viewed in the direction of flow of a working medium (11).

15 7. The turbine (1) as claimed in one of the preceding claims, characterized in that the clamping device (25) can be removed from the inner casing (20) after removal of the guide blade (12).

20 8. The turbine (1) as claimed in one of the preceding claims, characterized in that a guide ring arranged downstream in the direction of flow of a working medium (11) is manually accessible after removal of the clamping device (25) fixed to the inner casing (20).

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9. A fixing device for guide blades (12) of a turbine (1), the turbine (1) having a rotor (3) extending in the axial direction and an accessible combustion chamber (6) which communicates with an annular hot-gas duct (18) in which a
30 multiplicity of guide blades (12) are arranged in such a way as to form a guide-blade row (13), each guide blade (12) having a guide-blade root (21)

fixed to the inner casing (20) and a guide-blade tip (22) which is opposite the guide-blade root (21), faces the rotor (3) and is fixed to a fixing ring (24), enclosing the rotor (3), of the turbine (1), characterized in that the fixing device comprises
5 a manually releasable clamping device (25, 35) accessible from the combustion chamber.

10. The fixing device as claimed in claim 9, characterized in that the clamping device (25, 35) comprises two radially
10 extending retaining stops (26, 27, 36, 37) which can be fastened by means of a tie rod (28, 38).

11. A method of removing a guide blade (12) from a turbine (1) comprising a rotor (3) extending in the axial direction and an
15 accessible combustion chamber (6) which communicates with an annular hot-gas duct (18) in which a multiplicity of guide blades (12) are arranged in such a way as to form a guide-blade row (13), each guide blade (12) having a guide-blade root (21) fixed to the inner casing (20) and a guide-blade tip (22) which
20 is opposite the guide-blade root (21), faces the rotor (3) and is fixed to a fixing ring (24), enclosing the rotor (3), of the turbine (1) as claimed in one or more of the preceding claims, characterized in that the guide blade (12) of the first guide-blade row (13) as viewed in the direction of flow of the
25 working medium (25, 35) is removed manually through the combustion chamber (6) by the sequence of the following steps:
a. the clamping device (25) arranged on the inner casing

is released, then displaced into a parking position exposing the guide-blade root (21) and fixed there again,

b. the other clamping device (35) arranged at the inner fixing ring (24) is released, so that the guide-blade tip

5 (22) is exposed,

c. the guide blade (12) is displaced axially against the direction of flow of the working medium and is then tilted about the guide-blade tip (22),

d. so that the guide blade (12) is free after being moved
10 radially outward.